Shipboard Sampling Data Format and Transmission Specification

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Version 1.2

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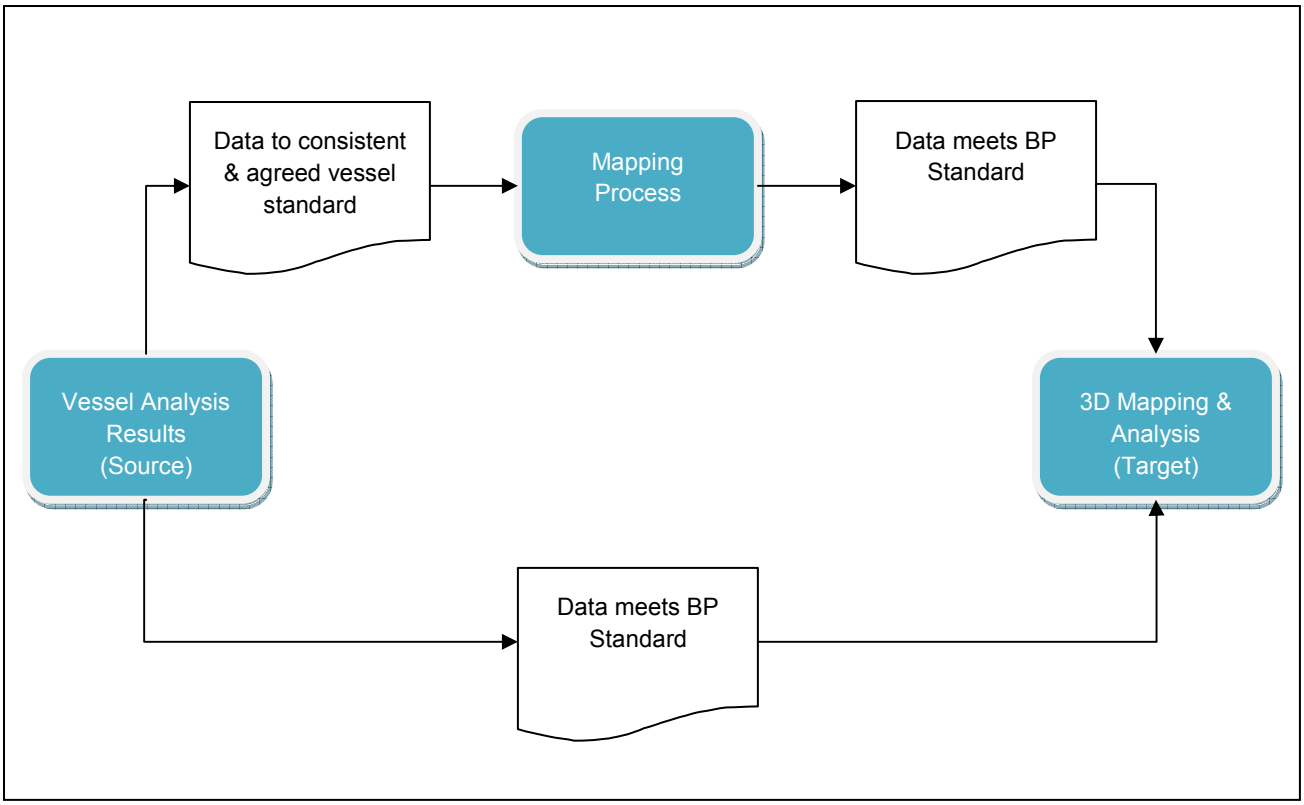
Change Log

New Version	Author	Update Made
1.1	Tim Morgan	Changed document name and title Updated first section to reflect addition of the LISST data format to the specification Binning interval changed from 0.5 meters to 1 meters. CTD Detail Record – Field Name “X” changed to “Long”, and “Y” changed to “Lat”. Modified date format to be consistent with other formats in file. Added LISST section
1.2	Tim Morgan	Added diagram to illustrate purpose of the standard and mapping

Sampling Requirements

Numerous organizations are keenly interested in receiving timely shipboard data (CTD and LISST) for analysis. Currently, this data is being delivered in numerous formats using a number of delivery channels which is complicating the preparation of the data for analysis.

In order to accelerate the analysis and the decision making process related to the CTD and LISST data, a consistent data file format is required for both sets of data. This document lays out a data specification for the consistent creation of the CTD and LISST data.



Ideally, research vessels will be able to generate the source data into the defined BP format. In situations where this is impractical then the vessels must provide their standard output format. BP will then map from the vessels source to the BP target.

CTD Sampling

Processed Data

Processed CTD data is required after everyday's sampling and delivered via a nightly FTP transmission (see Appendix 1 for FTP instructions).

Data Requirements

Processed CTD data and a CTD scan jpg are required for every station. Up-casting data must be removed from every scan and data binned at 1 meter intervals.

For timely analysis, the CTD data must be provided in the following format (a sample format is provided in Appendix 2). The data should be provided in a text format e.g. csv or asc.

Header Record

Field Name	Description	Format/Unit of Measure
Orig Datum Used*	Original Datum Used	See note below
Date	Date	MMDDYYYY
Start Time	Start Time – in GMT	HHMMSS
End Time	End Time - in GMT	HHMMSS
Longitude	Longitude	Decimal Degrees (8 decimal places)
Latitude	Latitude	Decimal Degrees (8 decimal places)

* To ensure the integrity of all spatial data associated with the Deepwater Horizon Project, any coordinates supplied in Latitude and Longitude must state which Datum the coordinates are on. In almost all cases this will be WGS84, NAD83 or NAD27.

Detail Record

Field Name	Description	Format/Unit of Measure
Long	Longitude	Decimal Degrees (8 decimal places)
Lat	Latitude	Decimal Degrees (8 decimal places)
Depth_m	Depth	Meters
Temp_C	Temperature	Celsius
Sal_PSU	Salinity	PSU
Den_Kg_m3	Density	Kg/m3
Vp_m_s	Sound Velocity	m/s
Pres_db	Pressure	Db
O2_mg_l	Oxygen	Mg/l
O2_ml_l	Oxygen	Ml/l
Fluoro_mg_m3	Fluorescence	Mg/m3
V1 (to VN as req'd)	Voltage Readings	V

Note: that if a sample is repeated at a given location then this sample should be uniquely identified from the original sample *by the date and time assigned to each*.

File naming convention

Within the FTP folder, each vessel has its own folder under which individual folders for the CTD, LISST and Location data has been created.

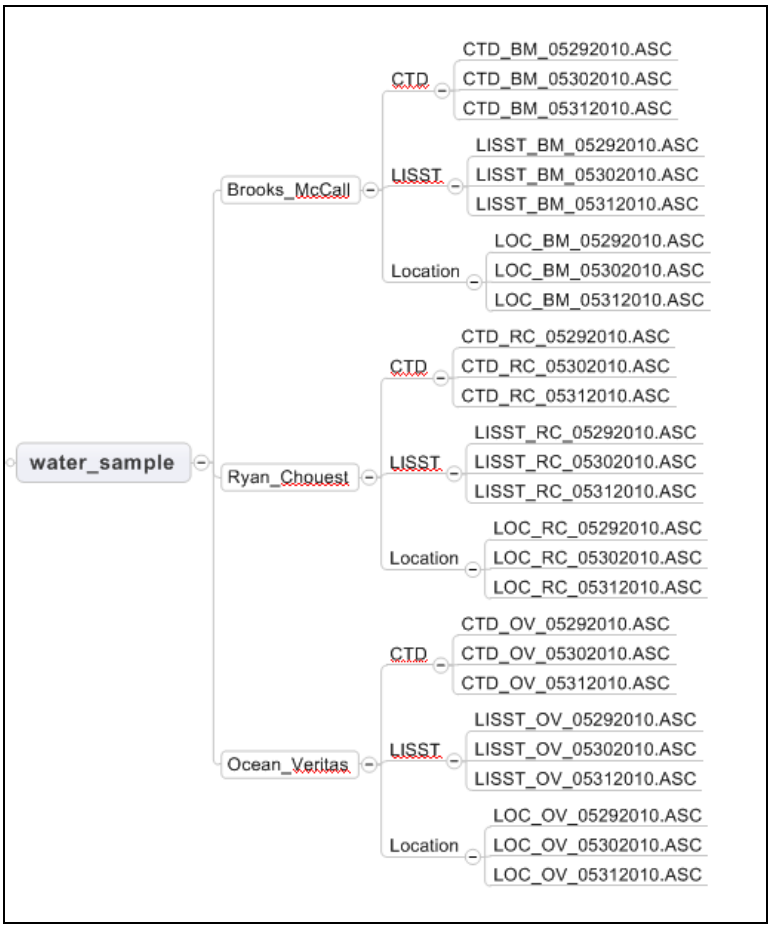
Data created in each folder must have the following format:

<DATA_TYPE>_<VESSEL_CODE>_<DATE (in format MMDDYYYY)>

<DATA_TYPE> = “CTD”, “LISST”, “LOC”

<VESSEL_CODE> = “BM”, “OV”, “RC”

The screenshot below illustrates the folder setup and sample files.



Raw Data

The raw data taken from each cruise will be stored and archived after each trip. The vehicle for delivery this information, because of its size, needs to be determined.

LISST Sampling

In reviewing LISST data samples from both the Ocean Veritas and the Brooks McCall and determining that they were using the same format, the data format detailed below was adopted, eliminating the need for either vessel to change their formatting.

Within the data format there are 32 size ranges logarithmically placed form 2.5 – 500 microns (the upper size in each bin is 1.180 times the lower). The numbers in columns A through AF shows the median size of each size class.

Processing the Data for Daily Reports:

The volume concentrations from columns A-S (2.5 to 53.5µm) is summed for each of the first twenty rows and averaged.

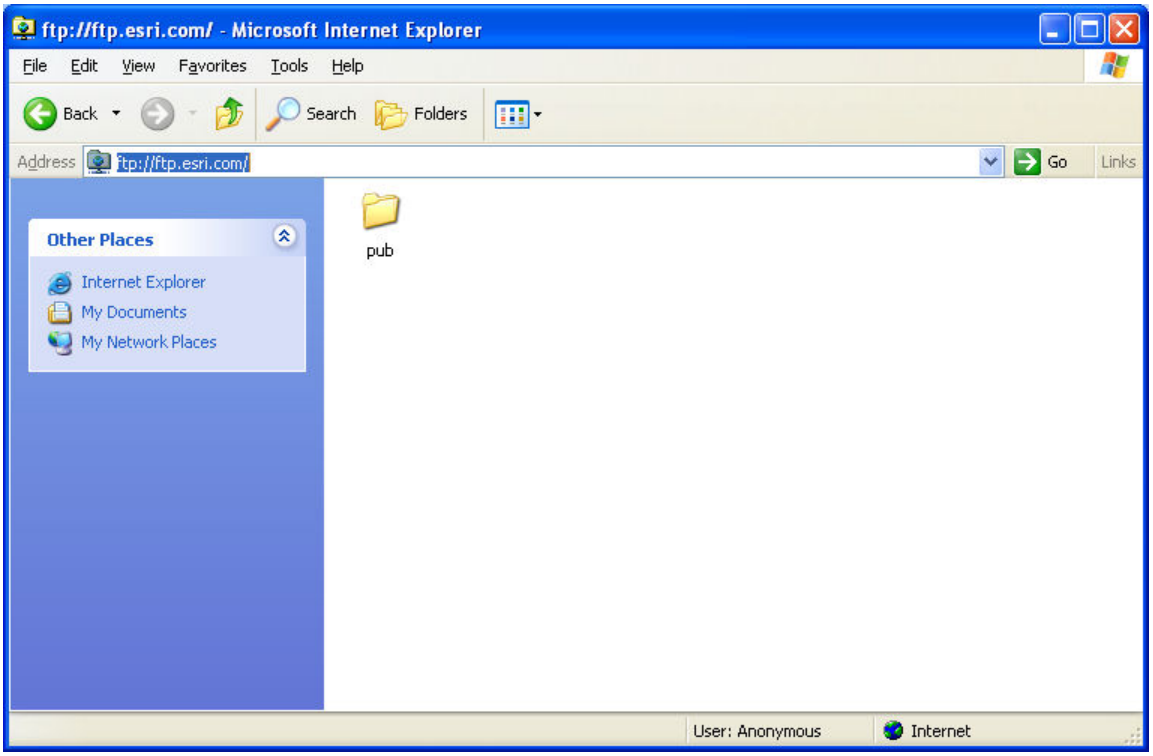
Field Name	Descriptions	Format/Unit of Measure
Filename	2 digit vessel + 3 digit station + 2 digit id	
Vol_1	2.72	
Vol_2	3.2	
Vol_3	3.78	
Vol_4	4.46	
Vol_5	5.27	
Vol_6	6.21	
Vol_7	7.33	
Vol_8	8.65	
Vol_9	10.2	
Vol_10	12.1	
Vol_11	14.2	

Vol_12	16.8
Vol_13	19.8
Vol_14	23.4
Vol_15	27.6
Vol_16	32.5
Vol_17	38.4
Vol_18	45.3
Vol_19	53.5
Vol_20	63.1
Vol_21	74.5
Vol_22	87.9
Vol_23	104
Vol_24	122
Vol_25	144
Vol_26	170
Vol_27	201
Vol_28	237
Vol_29	280
Vol_30	331
Vol_31	390

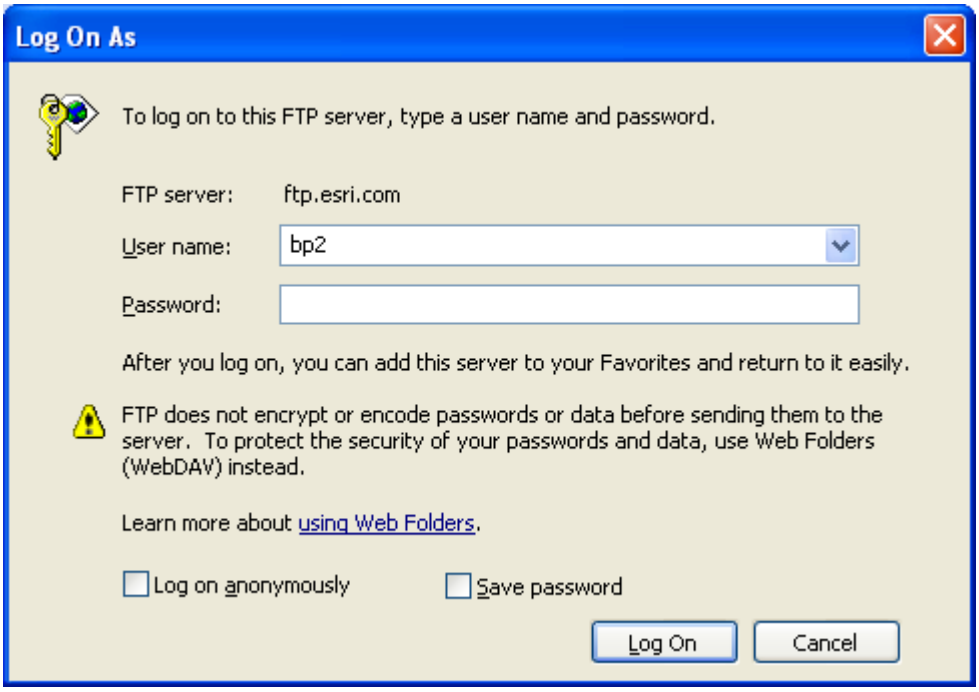
Vol_32	460
LTS	Laser Transmission sensor
Battery	Battery Voltage
ExtAux1	External Auxiliary Input 1
LRS	Laser Reference Sensor
Pressure	Pressure
Temperature	Temperature
Day	(Day*100 + Hour)
Mins	(Minutes*100 + Seconds)
OpticalTrans	Computed % Optical Transmissions
ComputedBeam	Computed Beam-C in Units of 1/m

Appendix 1 - FTP Instructions

Enter the URL in the IE Address bar ftp.esri.com



On the File menu click “Login As”

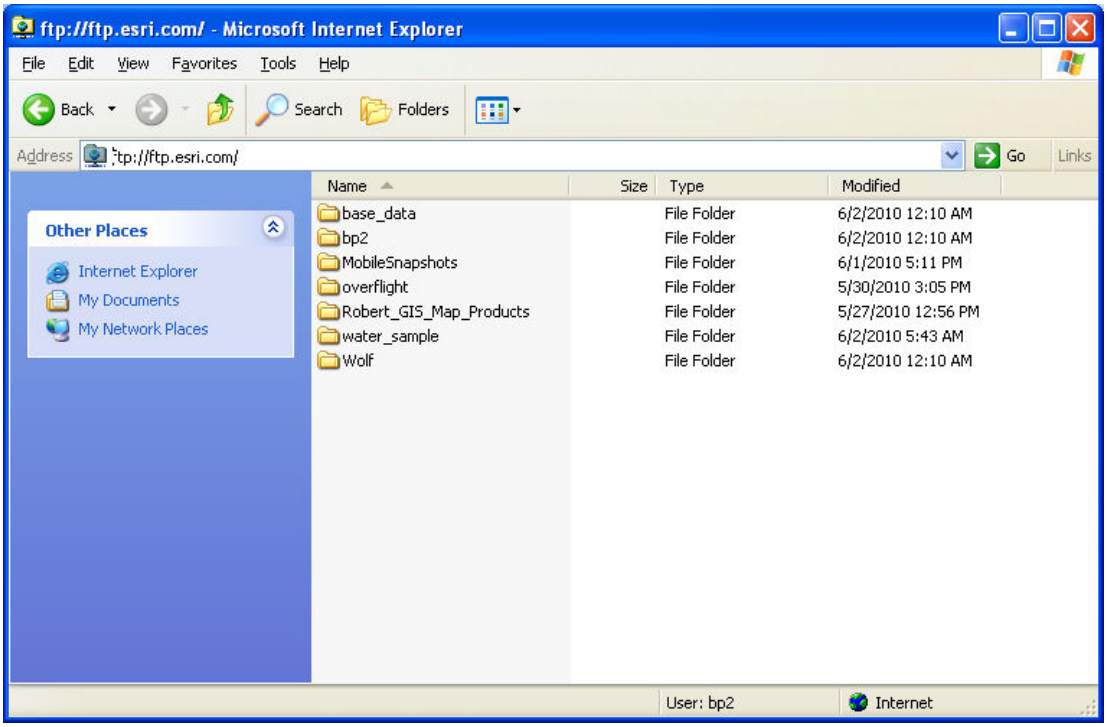


Enter the login credentials:

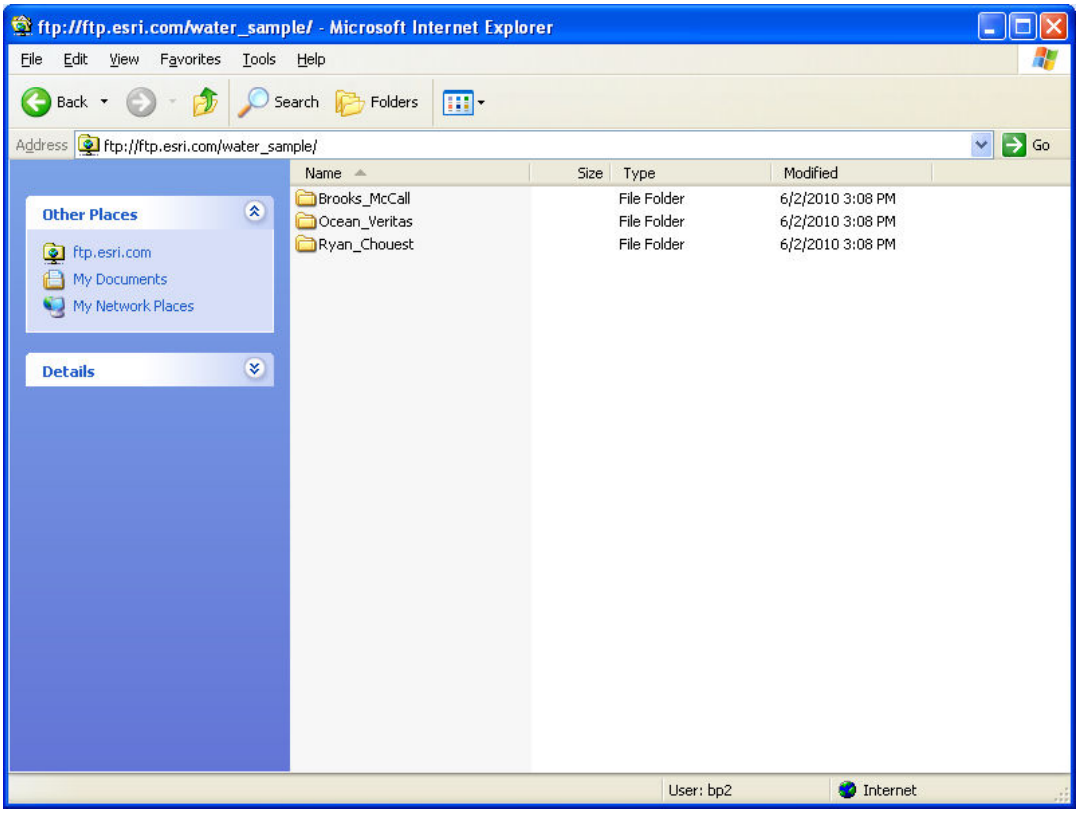
UID – “bp2”

PWD – “R0GG7Dmc” (the second char is a zero)

This should take you to the private folder structure



At which point you should be able to click on the “water_sample” folder under which you’ll see a folder for each vessel’s data.



Select the folder for your vessel and create a folder for this uploads data using the following format:

<DATE (in the format YYYYMMYY>_<StationID>

For example, 20100531_BM42.

Then upload the data into that folder

Appendix 2 – CTD Sample Data Format

Sample CTD file format:

WGS84	YYYYYMMDD	HHMMSS	HHMMSS	Decimal 8	Decimal 8						
Orig Datum Used	**Date**	**Start Time**	**End Time**	**Longitude**	**Latitude**						
Decimal 8	Decimal 8	Meters	Celsius	PSU	Kg/m3	m/s	Db	Mg/l	Ml/l	mg/m3	V1
X	**Y**	**Depth_m**	**Temp_C**	**Sal_PSU**	**Den_Kg_m3**	**Vp_m_s**	**Pres_db**	**O2_mg_l**	**O2_ml_l**	**Fluoro_mg_m3**	**V1**